Broadcom Comprehensive Configuration Management for HP FlexFabric Adapters User Guide

Abstract

This document is for the person who installs, administers, and troubleshoots servers and storage systems. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

Contents

Introduction

Overview

This document outlines the various menu prototypes of Broadcom CCM and provides visual representations of each menu.

CCM mode and invocation

CCM provides menu mode and scripting mode. The modes share the same data structure and keywords.

CCM is embedded inside the option ROM of Broadcom networking devices. When you update firmware, the option ROM CCM also updates if the firmware update includes a later version of the option ROM CCM.

The following table shows CCM invocation in three different environments.

Environments	Option ROM	DOS	Windows 32-bit	Windows 64-bit	Linux*
Invocation	Ctrl-S/Ctrl-B	`ccmcfg.exe`	`ccmcfg32.exe`	ccmcfg64.exe	`ccmcfg.bin`

*Linux `ccmcfg` is a 32-bit application. To be able to use it on a 64-bit Linux platform, be sure you have certain 32-bit application support modules installed. For example, on the 64-bit version of Red Hat Linux 6.0, the 32-bit version of `glibc` (`glibc-2-12-1.7.el6.i686.rpm`) and `nss-softokn-freelb` (`nss-softoknfreebl-3.12.7-1.1el6.i686.rpm`) RPMs need to be installed in order to install the `ccmcfg`. For details and accurate information, see the Linux user manual and release notes.

Install both RPM files with one command:

```
->rpm -ivh glibc-2-12-1.7-el6.i686.rpm
nss-softokn-freebl-3.12.7-1.1el6.i686.rpm
```

Press the **Ctrl-S** keys (default) or the **Ctrl-B** keys (depending on the configuration) to invoke the CCM menu in the option ROM screen during the boot sequence.

If you have multiple Broadcom networking cards in the platform, the CCM invocation banner only appears once during the boot sequence for all devices. The invoked CCM manages all supported devices in this platform. If CCM versions in different devices are different, the CCM with the latest version launches. When the first, running option ROM does not have CCM with the latest version, a message of "Newer Configuration Software on Other Device Detected, to be Launched Later…" appears. The CCM launches when the option ROM with the latest CCM version loads.

Menu mode

CCM menus

To invoke the CCM menu, do one of the following:

- Press the **Ctrl-S** or **Ctrl-B** keys during the boot sequence.
- Enter the `ccmcfg` command in DOS or a shell environment.

The CCM menu lists all supported devices in the current platform.

Device List menu

The Device List menu describes the Broadcom devices detected in the system.

```
Comprehensive Configuration Management v7.8.21
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                          ═══════ Device List ═══════

        <03:00:00> BCM5719  - D8:9D:67:1B:09:60 MBA:v16.0.4 CCM:v7.8.21
        <03:00:01> BCM5719  - D8:9D:67:1B:09:61 MBA:v16.0.4 CCM:v7.8.21
        <03:00:02> BCM5719  - D8:9D:67:1B:09:62 MBA:v16.0.4 CCM:v7.8.21
        <03:00:03> BCM5719  - D8:9D:67:1B:09:63 MBA:v16.0.4 CCM:v7.8.21
        <07:00:00> BCM57810 - AC:16:2D:83:09:18 MBA:v7.8.13 CCM:v7.8.8
        <07:00:01> BCM57810 - AC:16:2D:83:09:1C MBA:v7.8.13 CCM:v7.8.8




                        Select Device to Configure
              [Enter]:Enter; [↑↓]:Next Entry; [ESC]:Quit Menu
```

The MBA version is not directly visible for LOM devices and appears as **BIOS Built-in**.

Main Menu

The Main Menu describes the configuration options available for the device selected in the Device List menu.
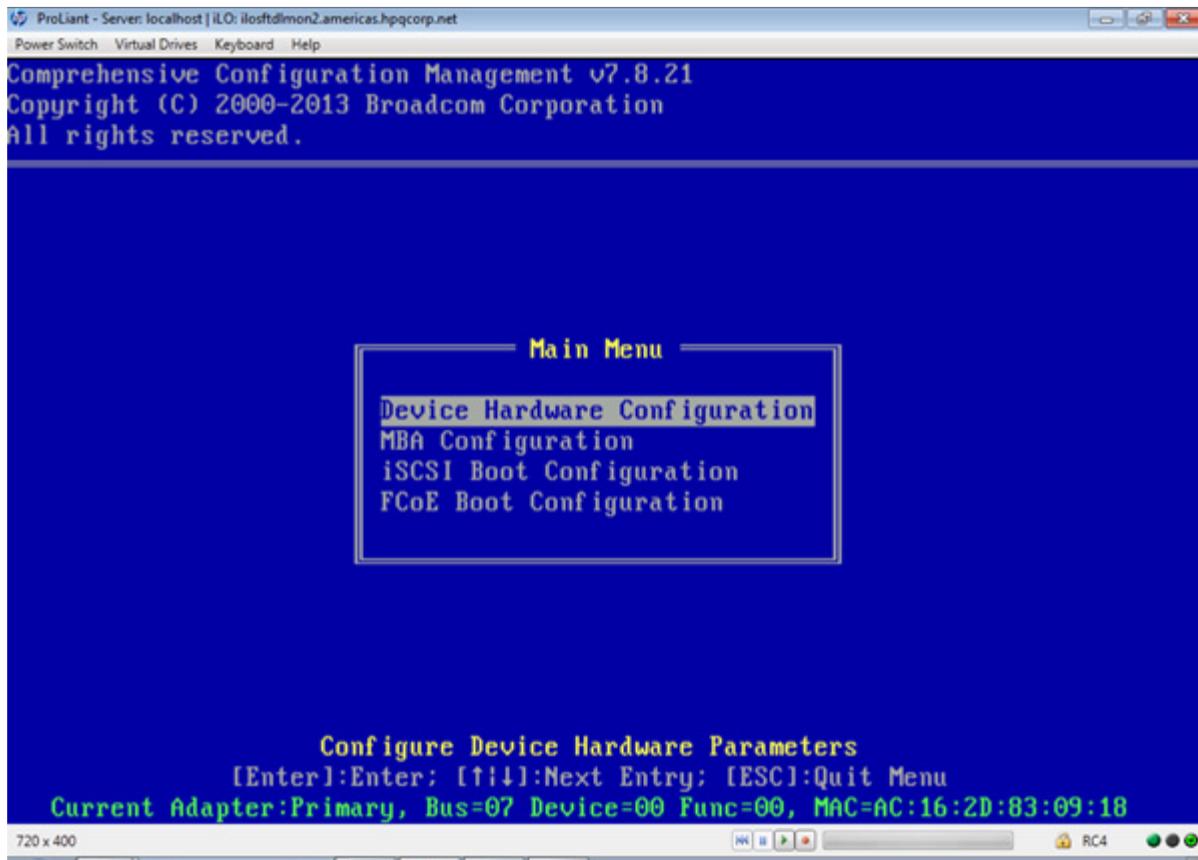
The following configuration items appear in the menu depending on a number of factors, such as if the device supports certain functionality, the presence of a valid license (if applicable), and the installation of the corresponding firmware package on the device. For more detailed information, see your specific device data sheet.

- Device Hardware Configuration (shown under 10G device only)
- MBA Configuration
- iSCSI Boot Configuration
- FCoE Boot Configuration
- NIC Partition Configuration*
- AFEX Configuration*

*Feature not supported by HP adapters.

Exit Configuration menu

If you made configuration changes in the submenus, the Exit Configuration menu appears when you exit the Main Menu. CCM prompts you to save or discard configuration changes before returning to the Device List menu.
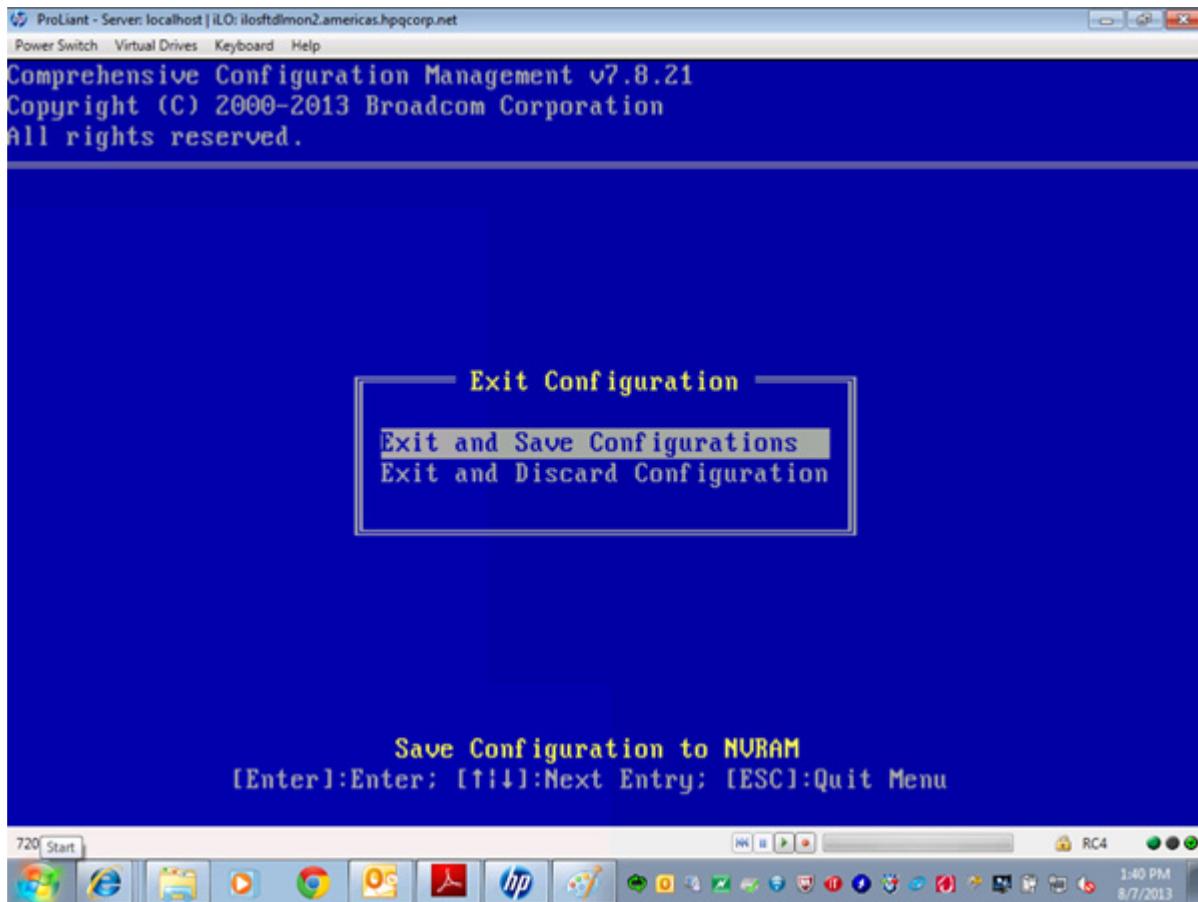
Parameters that take effect after rebooting

If you invoke CCM from a DOS, Windows, or Linux environment instead of the option ROM, some parameters take effect when you reboot the computer, such as the Hardware Configuration menu parameters. When you change and save parameters in these menus, a prompt appears reminding you to reboot the computer.
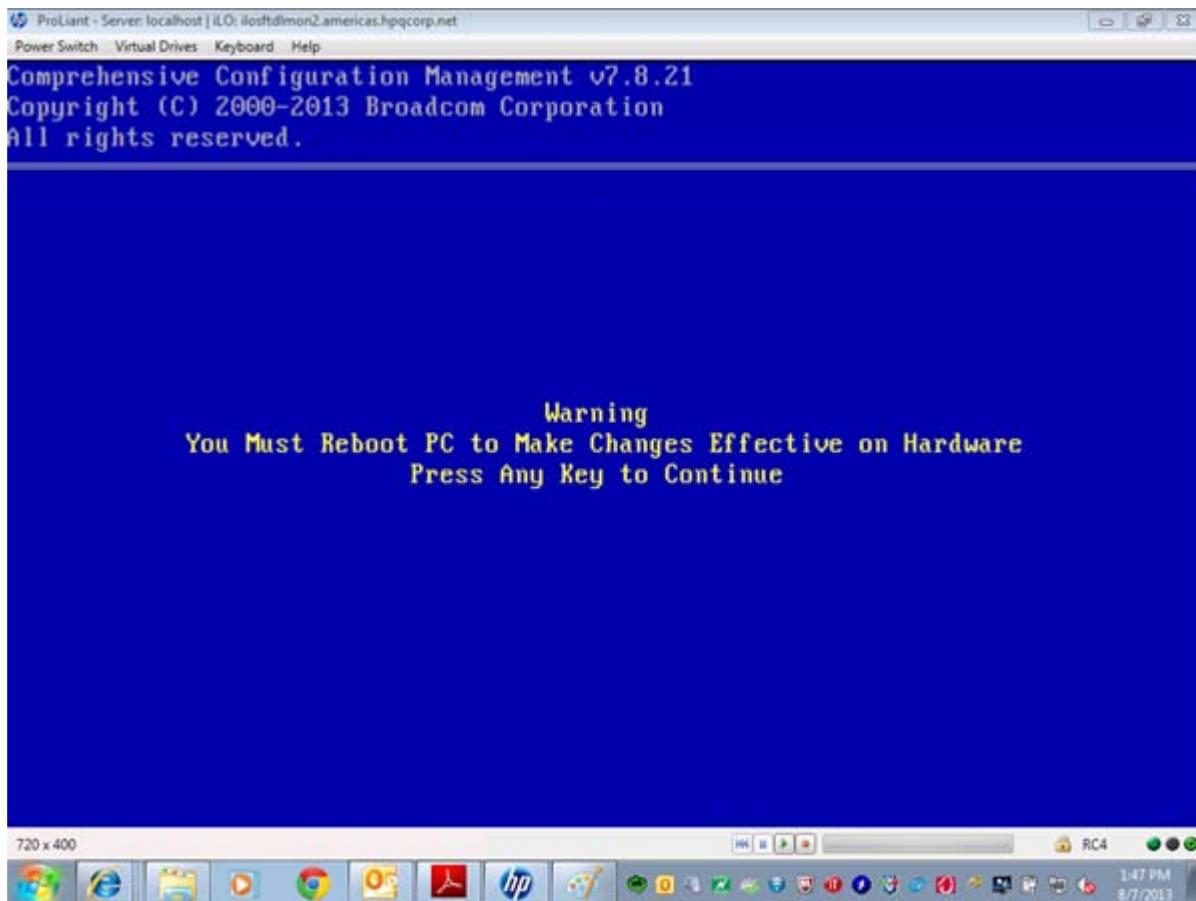
Device Hardware Configuration menu

The following table describes device hardware configuration options.

Device Hardware Configuration parameter	Parameter option	Description
Multi-Function Mode*		Appears when a device supports multi-functions
	MF	Multiple function allowed mode (only applies to certain devices)
	SF	Forced single function mode
	SPIO4	
	NPAR	NIC partitioning multi-function mode
	AFEX	VNTag multi-function mode
DCB Protocol		Enable/disable DCB protocol

Device Hardware Configuration parameter	Parameter option	Description
Energy Efficient Ethernet*		Enable/disable energy efficient ethernet
	Optimal Power and Performance	
	Maximum Power	
	Maximum Performance	
FLR Support		Enable/disable PCIE function level reset (enabled with PCI passthrough only)
SR-IOV		Enable/disable SR-IOV
Number of VFs per PF		Number of VFs per PF in multiples of 8
Max Number of PF MSIX Vectors		Maximum number of PF MSIX vectors
Storage Personality		Storage personality of function (applicable only in forced single function mode on certain devices)
	iSCSI	
	FCoE	

*Feature not supported by HP adapters.

The following image shows an example configuration with the Storage Personality parameter available.
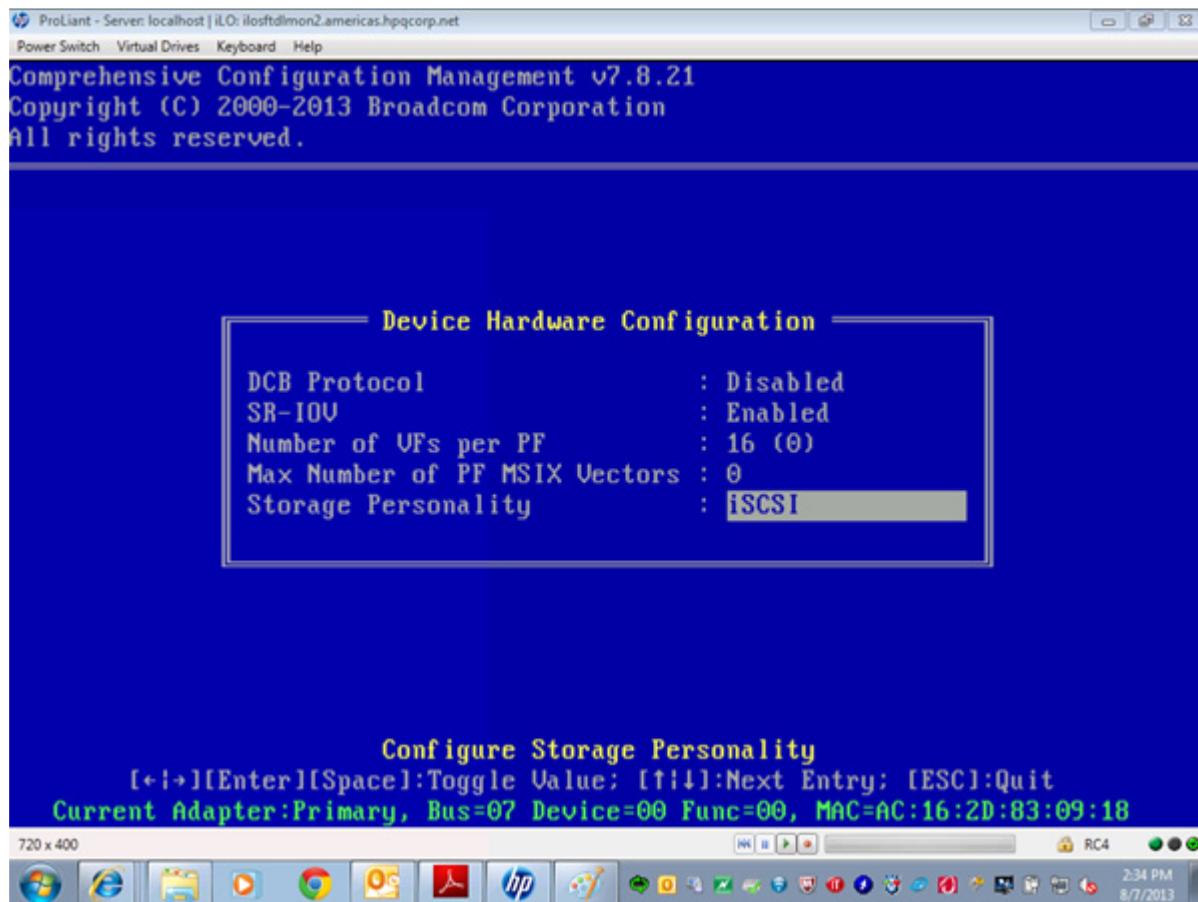
MBA Configuration Menu
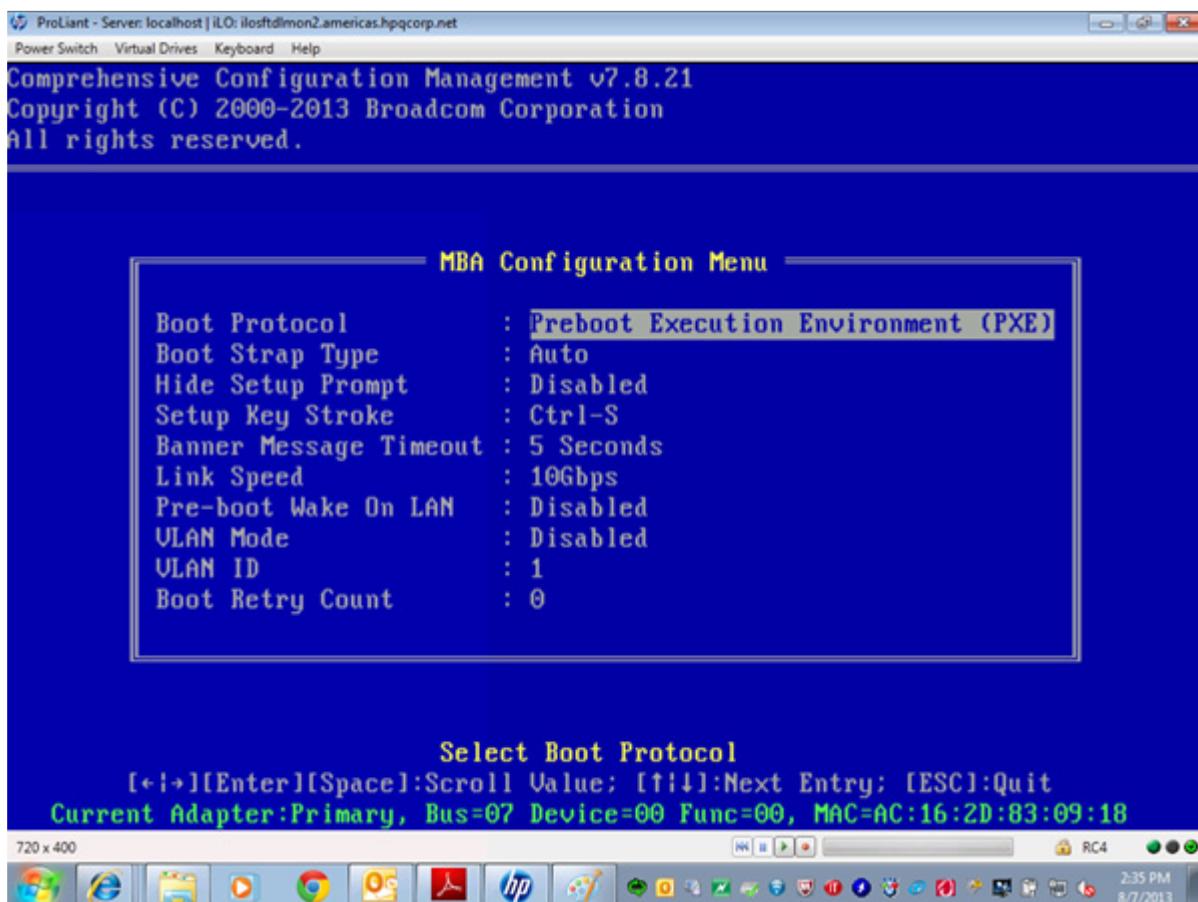
The following table shows MBA configuration options.

MBA configuration parameter	Description
Option ROM*	Enable/disable option ROM for a running device
Boot Protocol	Specify the boot protocol of the device
Boot Strap Type	Specify the boot strap type of the device
Hide Setup Prompt	Enable/disable MBA banner display during system boot
Setup Key Stroke	Specify key strokes to invoke CCM menu during system boot
Banner Message Timeout	Specify the seconds of MBA banner display time
Link Speed	Specify the MBA link speed of the device
Pre-boot Wake On LAN	Enable/disable the device pre-boot wake on LAN
VLAN Mode	Enable/disable VLAN mode
VLAN ID	Specify VLAN ID (valid when VLAN mode is enabled)
Boot Retry Count	Specify MBA boot retry times when boot fails before returning to BIOS (not supported on NX1 devices)
Blink LEDs	LED on NIC card blinks to identify mapping between the menu entry with the physical card location (not supported on 10G card)

*Feature not supported by HP adapters.

iSCSI Boot Main Menu

The iSCSI Boot Main Menu describes the iSCSI Boot configuration options.
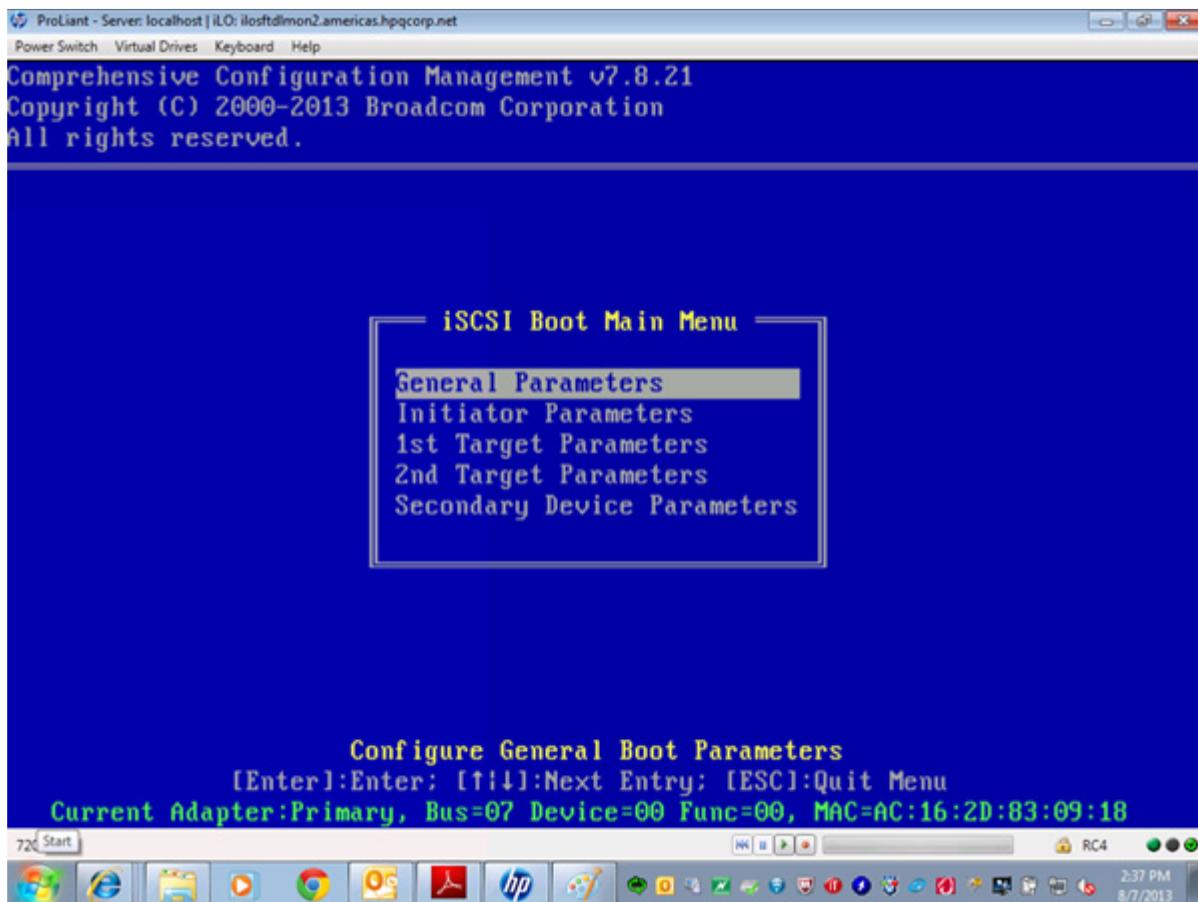
For BCV-based iSCSI ROM, the Secondary Device Parameters menu entry is not applicable and therefore hidden.
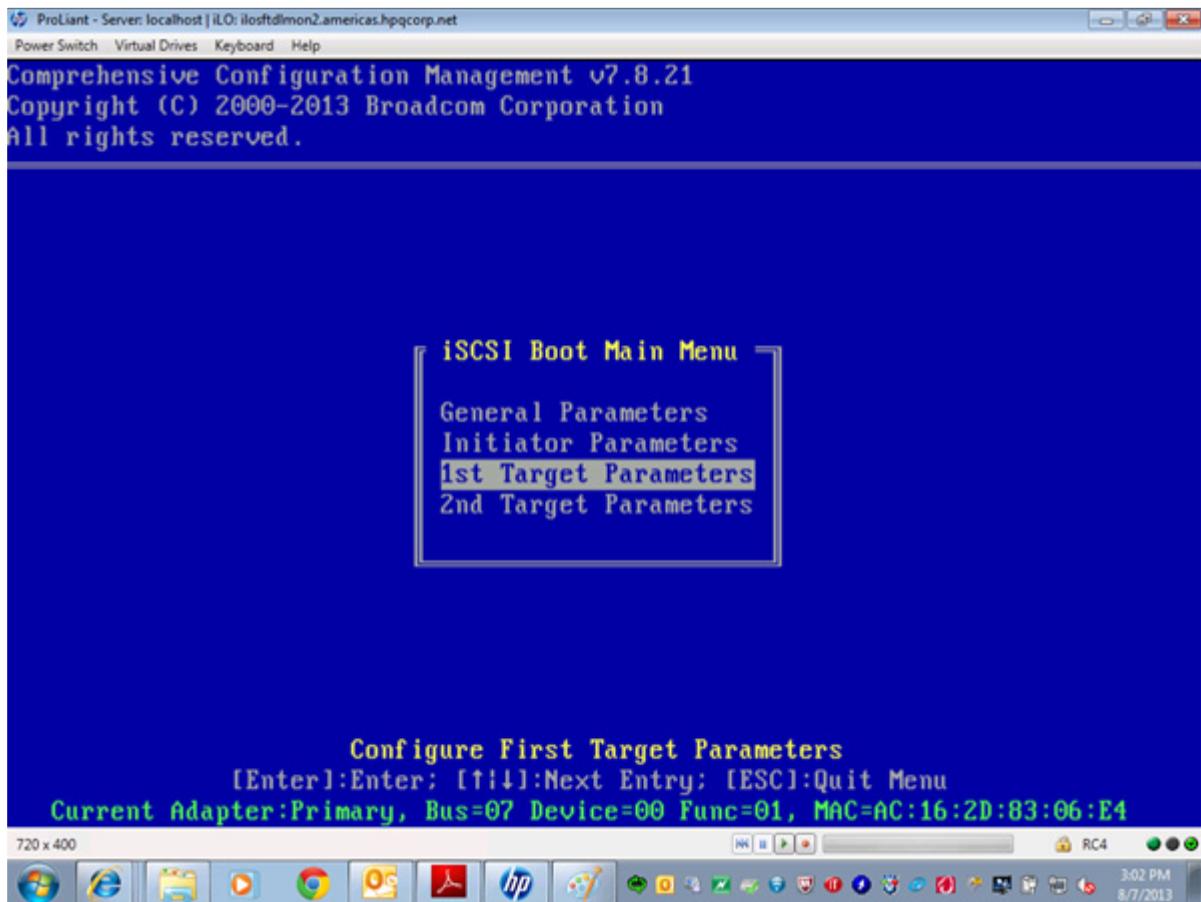
General Parameters menu

The General Parameters menu describes the iSCSI boot general parameters available for configuration.
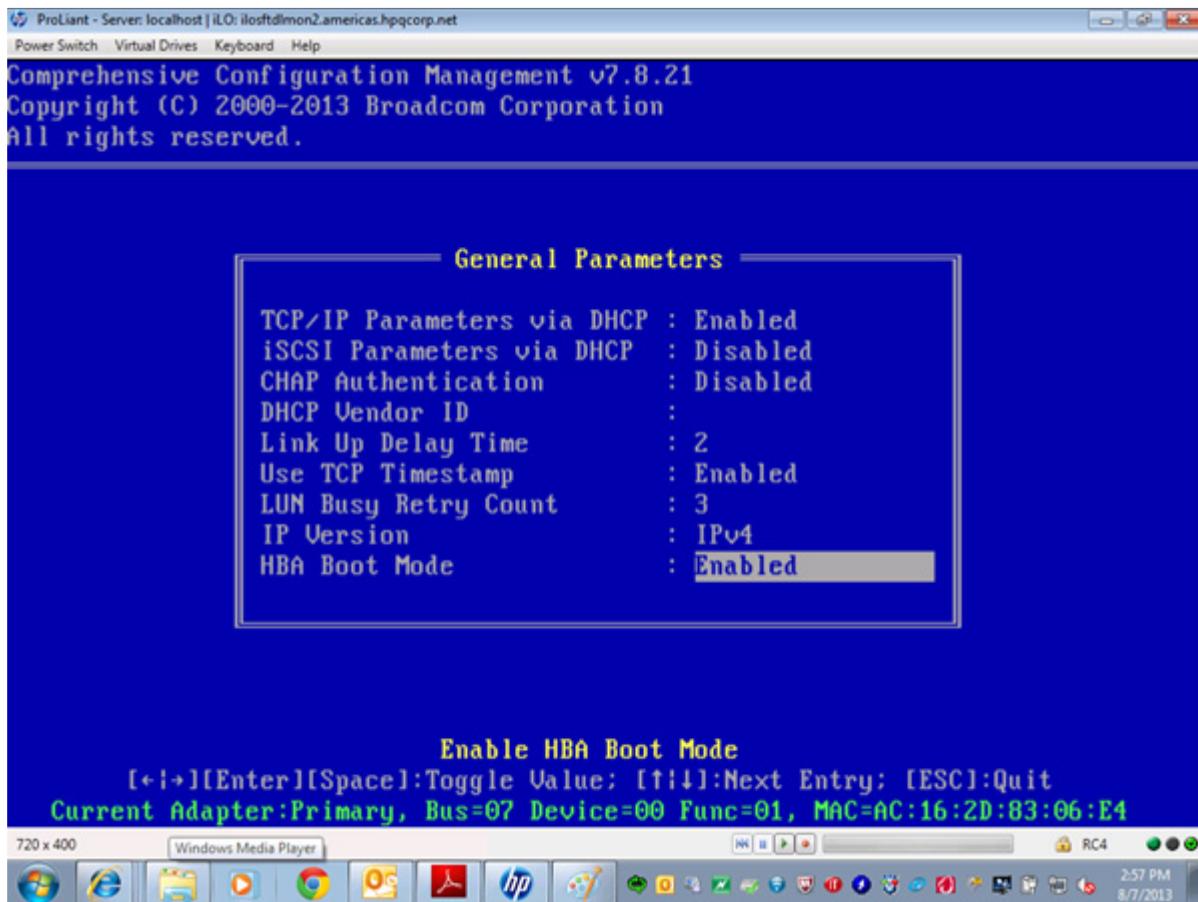
The following table describes iSCSI boot general parameter configuration options.

iSCSI boot parameter	Description
TCP/IP Parameters via DHCP	Enable/disable iSCSI boot initiator to acquire IP address via DHCP
iSCSI Parameters via DHCP	Enable/disable iSCSI boot initiator to acquire iSCSI target parameters via DHCP
CHAP Authentication	Enable/disable CHAP authentication
Boot to iSCSI target*	Enable/disable device to boot from iSCSI target after successful iSCSI login to iSCSI target (not applicable for BCV-based iSCSI ROM)
DHCP Vendor ID	Specify DHCP vendor ID
Link Up Delay Time	Specify seconds that iSCSI boot initiator delays before attempting to connect to the target
Use TCP Timestamp	Enable/disable TCP timestamp
Target as First HDD*	Specify the iSCSI target drive targeted as first HDD in system (not applicable for BCV-based iSCSI ROM)
LUN Busy Retry Count	Specify number of retry attempts if iSCSI target reports a LUN busy condition
IP Version	Specify IP version
HBA Boot Mode	Enable/disable HBA boot mode (only visible for devices with a valid offload license)

*Feature not supported by HP adapters.

For BCV-based iSCSI ROM, the Boot To Target and Target as First HDD parameters are not applicable and are hidden.

Initator Parameters menu
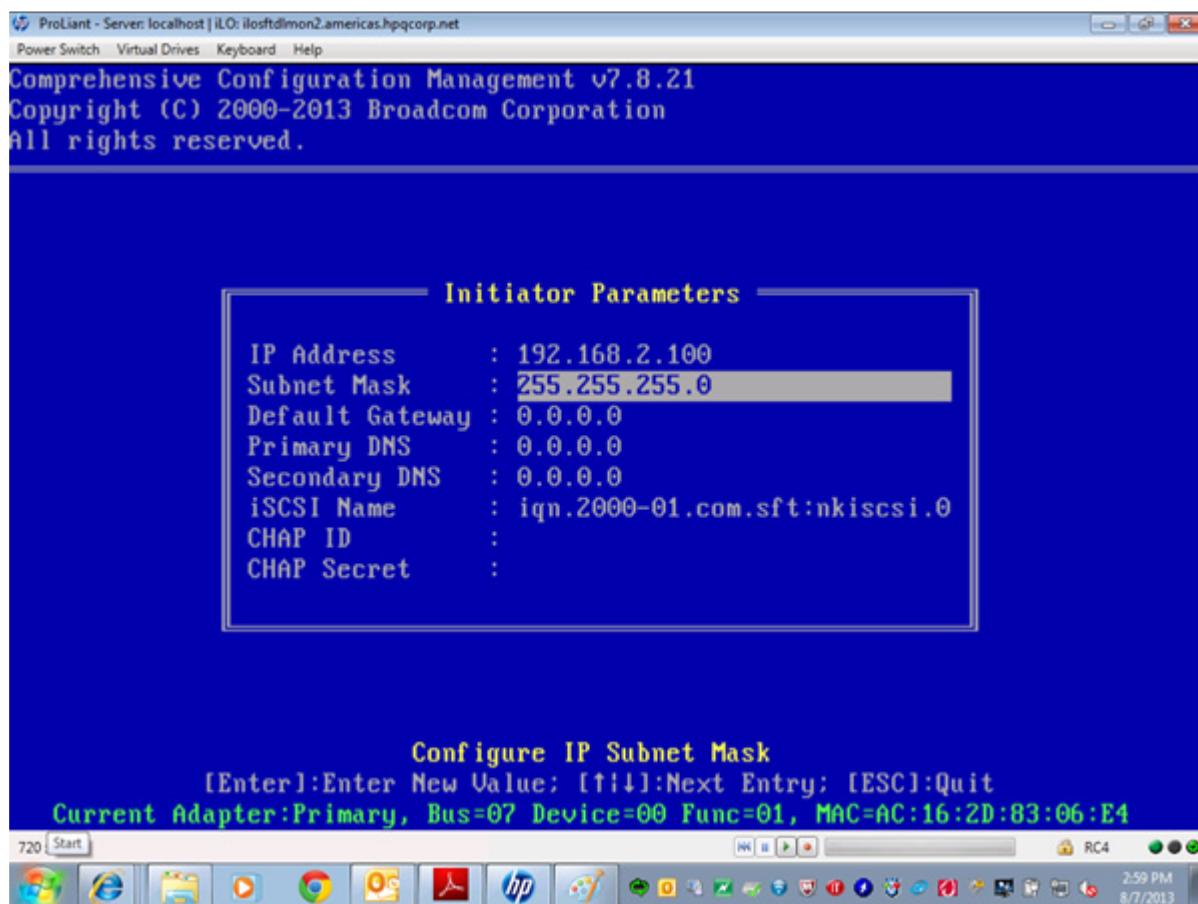
The following table describes iSCSI boot initiator parameter configuration options.

iSCSI boot initiator parameter	Description
IP Address	iSCSI boot initiator IP address
Subnet Mask	Subnet mask of iSCSI boot initiator
Default Gateway	Default gateway of iSCSI boot initiator
Primary DNS	Primary DNS of iSCSI boot initiator
Secondary DNS	Secondary DNS of iSCSI boot initiator
iSCSI Name	IQN name of iSCSI boot initiator
CHAP ID	iSCSI boot initiator CHAP ID (valid when CHAP authentication is enabled)
CHAP Secret	iSCSI boot initiator CHAP secret (valid when CHAP authentication is enabled)

1st Target Parameters menu
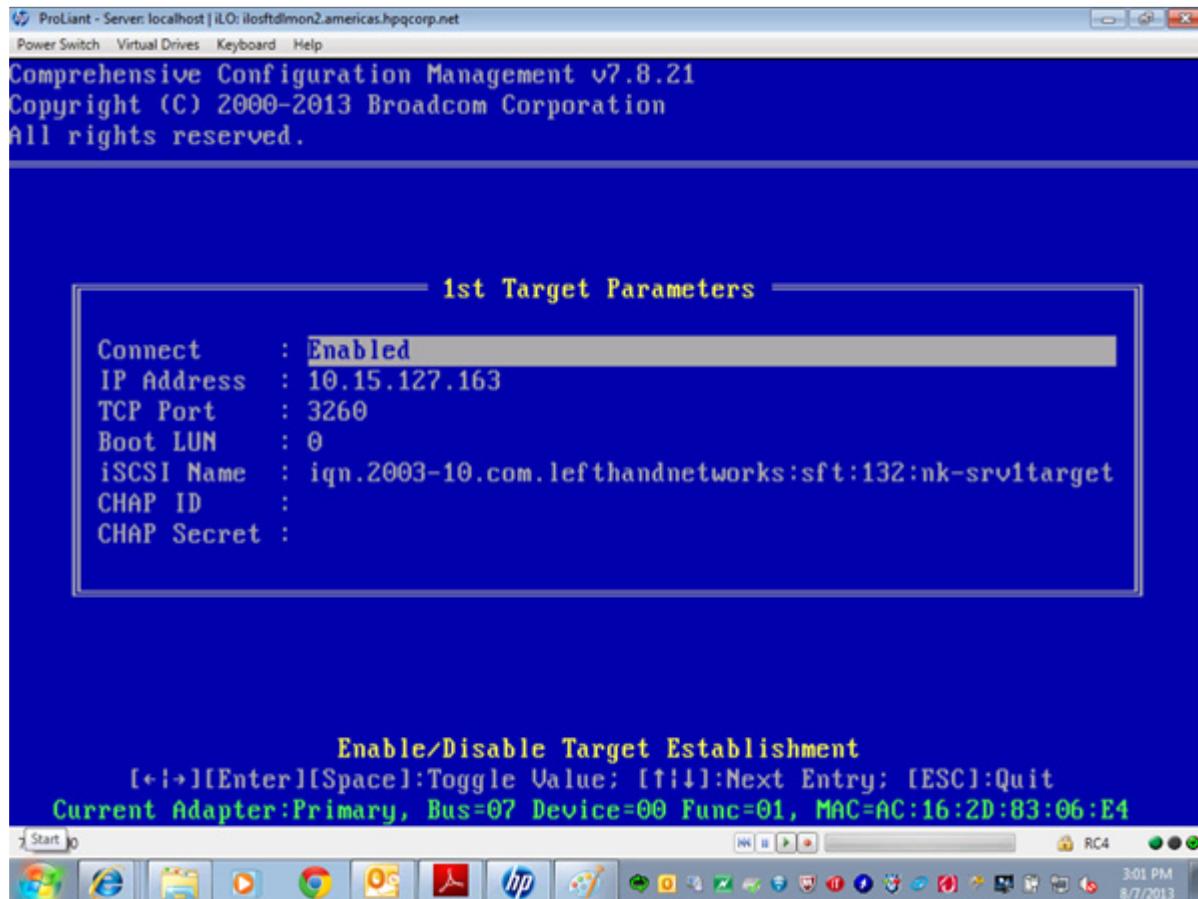
The following table describes iSCSI boot first target parameter configuration options.

iSCSI boot first target parameter	Description
Connect	Enable/disable connection to the target
IP Address	iSCSI boot target IP address
TCP Port	TCP port number of iSCSI target
Boot LUN	Boot LUN of iSCSI target
iSCSI name	IQN name of iSCSI boot target
CHAP ID	iSCSI boot target CHAP ID
CHAP Secret	iSCSI boot target CHAP secret (implies mutual CHAP authentication method when present)

2nd Target Parameters menu

The configuration options for the iSCSI boot second target parameters are described in the iSCSI boot first target parameters menu ("1st Target Parameters menu" on page 17).

Secondary Device Parameters menu
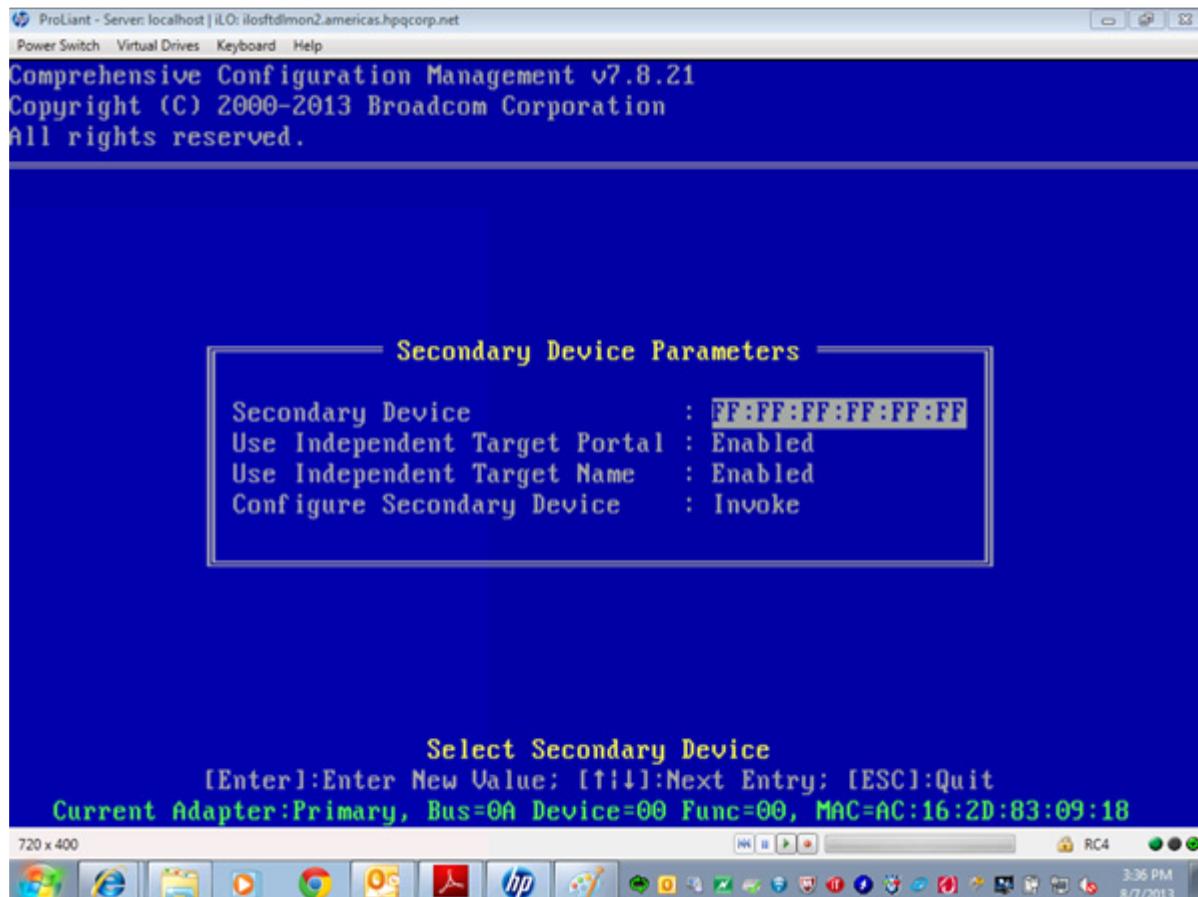
The following table describes iSCSI boot secondary device parameter configuration options.

iSCSI boot secondary device parameter	Description
Secondary Device	MAC address of secondary device (implies MPIO configuration if not zero)
Use Independent Target Portal	Enable/disable secondary device to use own target portal
Use Independent Target Name	Enable/disable secondary device to use own target name
Configure Secondary	Invoke iSCSI boot configuration menu for secondary device

The qualified secondary devices must meet the following conditions:

- The devices must belong to the same family as the primary NIC device.
- The secondary candidate device must have an iSCSI configuration file loaded.
- If the primary device has HBA mode enabled (which means it has a valid offload license), then the qualified secondary device also must have a valid offload license. To use another device without an offload license as valid secondary device, turn off MBA mode in the primary device configuration.

The iSCSI boot secondary device menu is not applicable for BCV-based iSCSI ROM. For BCV-based iSCSI ROM, secondary device parameter settings are implicitly based on the characteristics of the device used to create the secondary connection.

FCoE Boot Main Menu

The FCoE Boot Main Menu describes the FCoE boot configuration options.
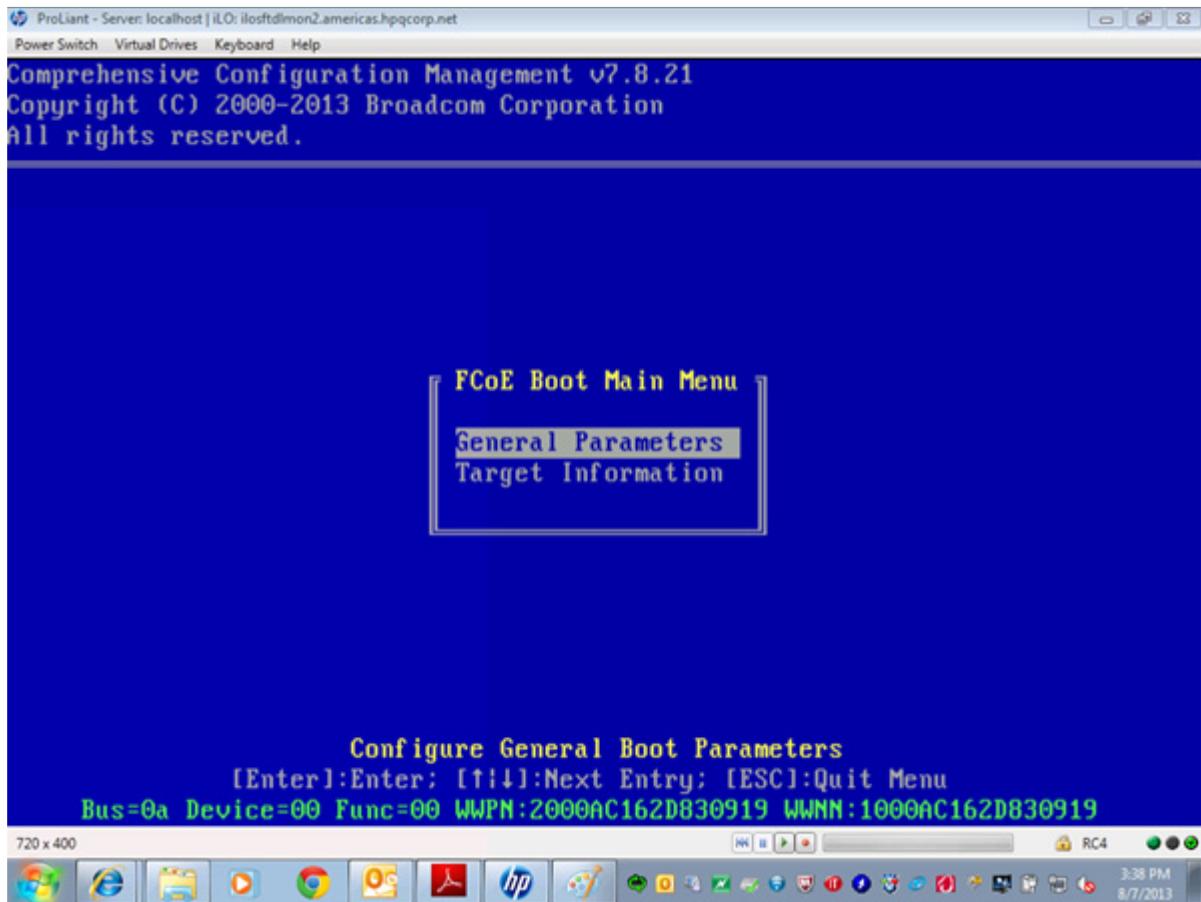
General Parameters menu

The FCoE boot General Parameters menu describes the parameters available for configuration.
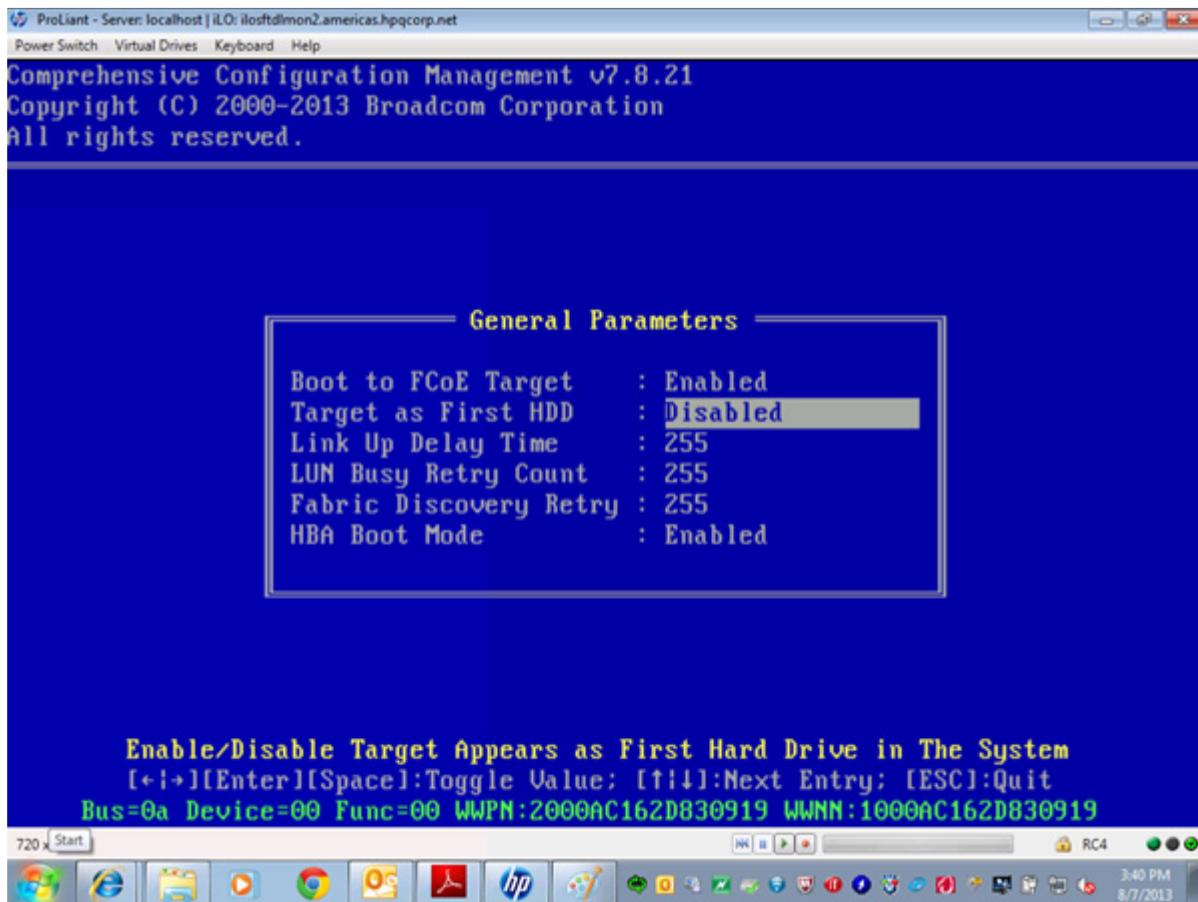
The following table describes FCoE boot general parameter configuration options.

FCoE boot parameter	Description
Boot to FCoE target*	Enable/disable device to boot form FCoE target after connecting to the FCoE target
Target as First HDD*	Enable/disable FCoE target to be treated as first HDD in the system (not applicable for BCV-based FCoE ROM)
Link Up Delay Time	Specify seconds the FCoE boot initiator delays before attempting to connect to the target
LUN Busy Retry Count	Specify number of retry attempts if FCoE target reports a LUN busy condition
Fabric Discovery Retry	Specify retry times before quitting fabric discovery
HBA Boot Mode	Enable/disable HBA boot mode

*Feature not supported by HP adapters.

For BCV-based iSCSI ROM, the Boot To Target and Target as First HDD parameters are not applicable and are hidden.
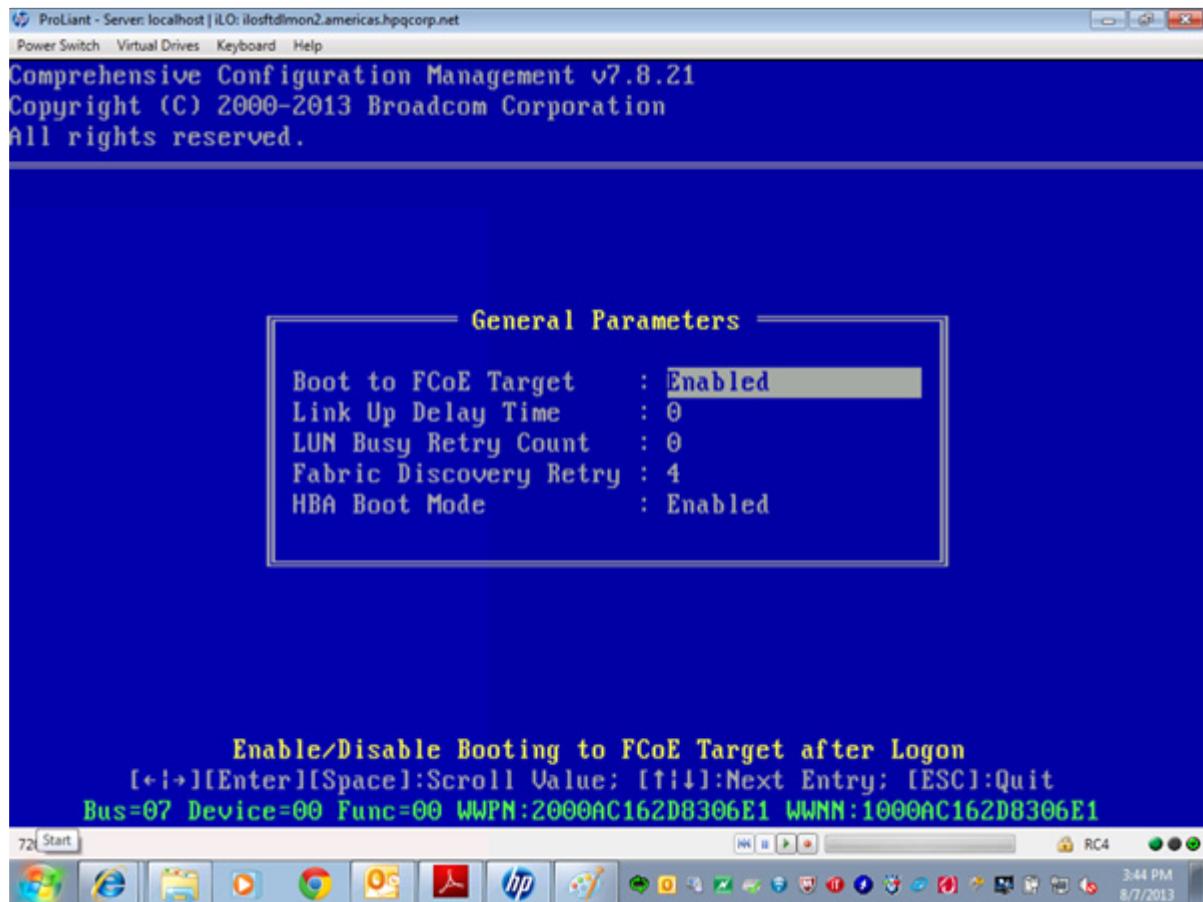
Target Information menu

The FCoE boot target information menu displays all target information.
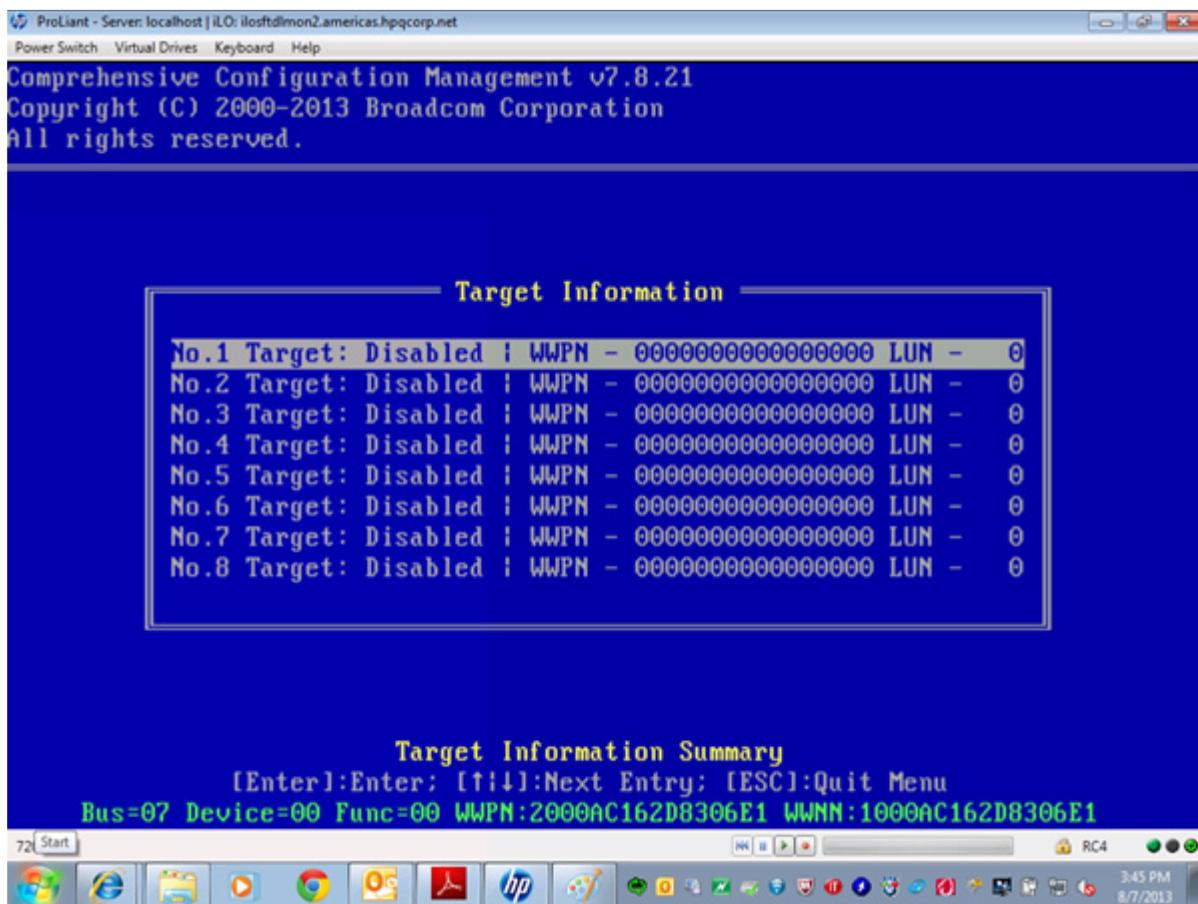
Target Parameters menu

The FCoE boot Target Parameters menu displays the current state of the target, the WWPN, and the boot LUN.
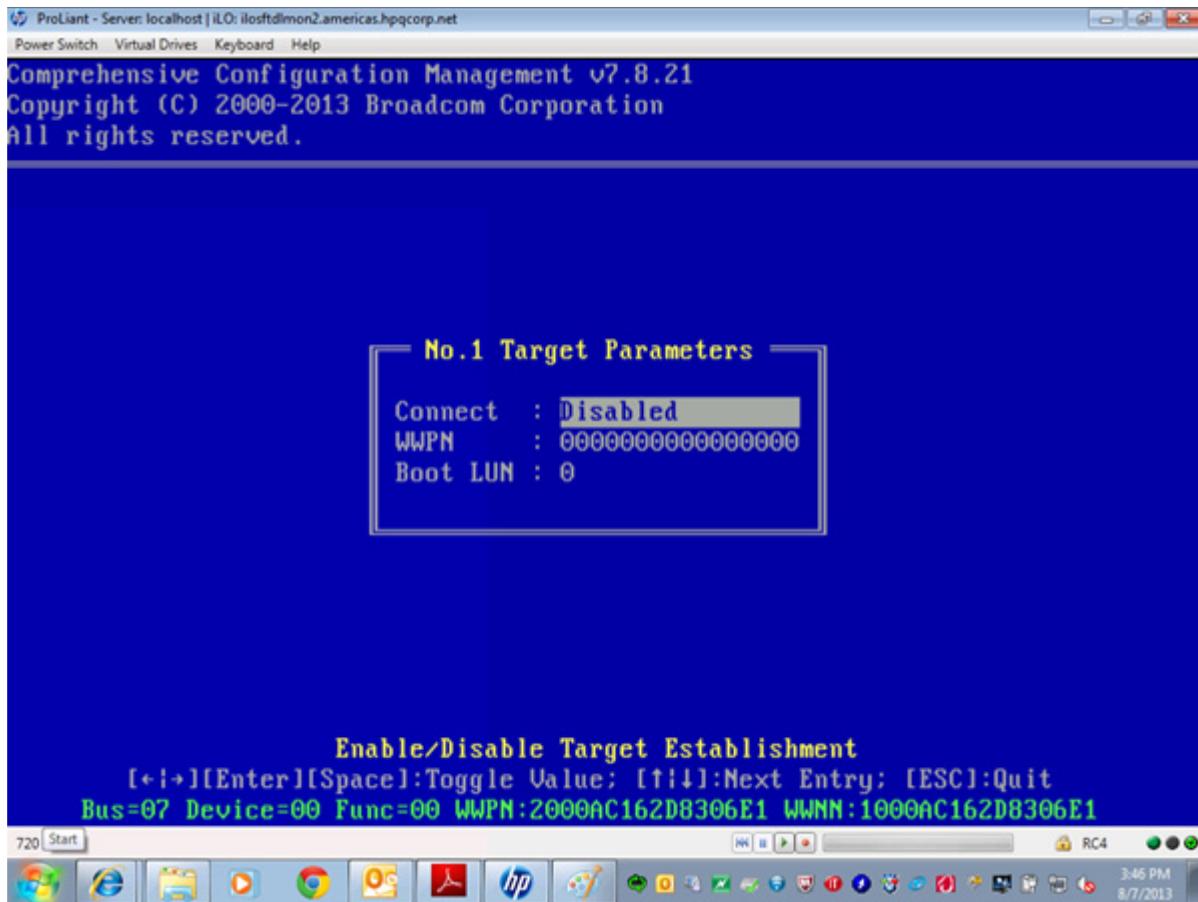
Scripting mode

Scripting mode overview

Invoke ccmcfg from the DOS prompt in either a DOS or Windows environment. The following example shows formatting and usage commands:

```
C:\test\7.8.21>ccmcfg32 -help

CCMCFG32 v7.8.21 - Comprehensive Configuration Management

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Usage: ccmcfg32 [Options]
```

The following table describes the options.

| Command	Description
-list	List available configurable devices
-get [<file name>]	Retrieve parameters from the devices If <file name> is not presented and -stdout is not set, the file named <MAC Address[last 4 bytes]>.cfg is used as output file for each individual device. Any existing <file name> is overwritten without warning.
-getItemGuide [<file name>]	Retrieve all configurable parameters of the devices The saving file options are the same as -get with a file name of <MAC Address[last 3 bytes]GD>.cfg.
-set [<file name>]	Set parameters in specified file to devices If the file contains no section name, the iSCSI section is used for backward compatible. Multiple devices and multiple sections can be put into a single script file such as in the file from -get. If <file name> is not presented, -stdin is used as input file. A log file named <MAC[Last 4 Digits].log> is logged for each device with the following information: • The difference between configuration file and current configuration on the card • Any syntax errors detected while parsing the script file • Any error and warning while trying to set the value such as an invalid value If -stderr is presented, the content of log file is output to STDERR at the same time.
[-setmode <Check|Safe|Force>]	Mode when running -set Check Mode: In this mode, no configuration is saved. Only the error check is performed against the script file. Safe Mode: In this mode, no configuration is saved if any error is detected in script file. Force Mode: In this mode, script entries without error in script file are saved, and script entries with errors detected are ignored. This is default mode.
-default [iscsi|fcoe|nicp|afex]	Set iSCSI, FCOE, NIC Partitioning, and/or AFEX parameters to default values If there is no function specified, all functions above are set to default values. Only functions with configuration block existing on the device are set. If no device scope is specified, all devices are set to default values.
-stdout	Valid with -get This command uses the standard output as the output file.

Command	Description
-stderr	Valid with -set Output Log File to STDERR.
-dev <MAC Address>	Operation scope is the format of the device with MAC address in xx:xx:xx:xx:xx:xx
-card <card#...>	Operation scope is the cards of number(from 0)
-pfn <bus:dev:func>	Device location in bus The operation scope is device:function.
-termLines <lines>	Screen scroll lines 0 means no terminal control.
-termWidth <columns>	Screen width 0 means no terminal control. In a DOS environment, the default is -termLines 25 and -termWidth 80, which matches default terminal size. In a Windows environment, the default is -termLines 0 and -termWidth 0, which provides no terminal control.
-help	Display help and exit

Operation device scope

For the -get operation, specify the device scope by the device scope command option -dev, -card, or -pfn.

For the -set operation, specify the device scope by both the command line option and device indicators in the scripting file. The rule to determine the device scope changes depending on whether the scripting file contains a single device script or multiple device scripts.

Select devices in one of two ways:

- MAC address

  Select the device based on the MAC address in the scripting file. Device family matching of the device ID from the file and from the actual device is checked.

- Device family

  Select the device using the device family. The MAC address is ignored.

The -set command device scope selection rule follows.

Command line device option	Single device scripting file	Multiple device scripting file
No	MAC address-based selection	MAC address-based selection
Yes	Device family-based selection	MAC address-based selection

Command line device options include -dev <MAC Address>, -card <card#..> and -pfn <bus:dev:func>.

Script file format

A script file contains information to configure the devices. It contains the following blocks.

Comments

```
;*********************************************************************
;CCMCFG32 v7.8.21 - Comprehensive Configuration Management
;Copyright (C) 2000-2013 Broadcom Corporation
; Dumping Configuration Parameters of Device [00:10:18:6F:D2:74] to
outfile.txt
;*********************************************************************
```

Characters after a semicolon are treated as comments.

Device block

```
[Device Parameters]
MAC Address = 00:10:18:6F:D2:74
PCI Function Number = 01:00:00
Device Type = BCM57712
Vendor ID = 0x14E4
Device ID = 0x1662
Subsystem Vendor ID = 0x14E4
Subsystem Device ID = 0x1213
```

Inside the [Device Parameters] block, only <MAC Address> and <Device ID> keys are used to specify device scope. The rest of lines are informational descriptions. For details about the device scope specification, see "Operation device scope (on page 26)."

Section declaration head

The section head format is [section <section name>]:

```
[Section MBA Configuration Menu]
Option ROM = Disabled
Boot Protocol = Preboot Execution Environment (PXE)
Boot Strap Type = Auto
Hide Setup Prompt = Disabled
Setup Key Stroke = Ctrl-S
Banner Message Timeout = 5 Seconds
Link Speed = 10Gbps
Pre-boot Wake On LAN = Disabled
VLAN Mode = Disabled
VLAN ID = 1
Boot Retry Count = 0
```

Group declaration head

The group declaration head format is [<group name>]. In the following example, [General Parameters] is the group declaration head and [Section iSCSI Boot Main Menu] is the section declaration head. The group head is optional depending on whether the configuration is hierarchical. The MBA configuration section does not have a group head, but other sections have group heads.

```
[Section iSCSI Boot Main Menu]
```

```
[General Parameters]
TCP/IP Parameters via DHCP = Enabled
iSCSI Parameters via DHCP = Enabled
CHAP Authentication = Disabled
Boot to iSCSI Target = Enabled
DHCP Vendor ID = BRCM ISAN
Link Up Delay Time = 0
Use TCP Timestamp = Disabled
Target as First HDD = Disabled
LUN Busy Retry Count = 0
IP Version = IPv4 ; Read Only
HBA Boot Mode = Disabled
```

Key and value

```
CHAP Authentication = Disabled
```

Mapping key words from menu

The key words, value, section name, and group head names are all identical to the terms in the menu. For backward compatibility, the script file dumped from the `ibcfg` program containing different key words from CCM menu is accepted and correctly mapped to the new terms.

Case sensitivity and space sensitivity

Space sensitivity means `word1   word2` (two spaces between the words) is treated as a different string from `word1 word2` (one space between the words). The following table is a summary of case sensitivity and space sensitivity of different fields in the scripting file.

Field	Case and space sensitivity
Command line options	No
Section name	No
Group name	No
Key	No
Value in string type	Yes
Value in other types	No

Hidden string or password field treatment

In CCM versions earlier than 6.2.13, password or CHAP secret strings appear as ****…**** in the -get operation and in log files in conformance with the menu policy. If the password field contains asterisk-only characters, the -set operation ignores it with a warning logged in the log file.

In version 6.2.13 and later, the -get operation encrypts the password string with a MAC address-based key and places a MAC address-based signature on the string. When the -set operation encounters the password field, it verifies the string signature. If the -set operation verifies the string has a valid signature for the current port, the string is decrypted. If the signature verification process fails, the string is treated as a clear non-encrypted string.

Based on the previous algorithm, you can use the -set operation to set the encrypted password only to the same NIC and port of the -get operation. If you use the -set operation to set the encrypted password to a different NIC or port, the password string is treated as a non-encrypted string. In this case, because of the binary-to-ASCII conversion and extra tails added during encryption process, the encrypted string is longer than the original string and is likely to cause an over-length error. The -set log file indicates whether CCM treats the password field as an encrypted string (with a ; L[LineNo] Encrypted comment following the difference line) or a non-encrypted string (with a ; L[LineNo] Clear comment following the difference line) during the -set operation.

To manually type in a clear password, modify the password field with a clear password string. The encrypted password string is generated only by the -get operation. Users cannot manually generate an encrypted password string for security reasons.

Script execution order

In CCM versions earlier than 6.2.2, the script order is requested for mutual dependent parameter configurations or errors occur. For example, IP version configuration must occur before the corresponding dependent IP address configuration. CCM version 6.2.2 and later handles dependent parameter configuration so that script order is no longer requested. In the previous example, IP address configuration can occur before IP version configuration as long as the two parameters match. This eases the script automation process from -get converted to -set.

Convert -get result for use by -set

The -get script can be used directly by -set. However, if -get is taken from different devices or a different port in a NIC, you must manually modify some parameters. For example, in 10G devices supporting NIC partitioning, if the script to perform the -get operation from port 0 is used to perform the -set operation to port 1, port-specific parameters such as NIC partition functions are rejected because port 0 contains 0, 2, 4, and 6 NIC partition numbers and port 1 contains 1, 3, 5, and 7 NIC partition numbers. In this case, a manual modification is requested.

When you use a configuration file obtained from -get as a base to create a new file for the -get operation, configuration errors can be introduced due to loss of consistency. For example, when you change NPAR from enable to disable, the detailed configuration items for each partition in the original file obtained from the -get operation when NPAR was enabled become invalid. If you use the modified inconsistent file to perform the -set operation, error messages appear.

To resolve errors, do one of the following:

- Ignore the errors.

  By default, the -setmode of the -set operation is <Force>, which ignores any errors and saves the valid part of configuration file. A concern with this approach is the possibility of overlooking other errors.

- Modify the rest of configuration file to keep configuration file consistent.

  For example, if the -get operation obtains a file with NPAR enabled, and then you disable NPAR, comment out the NPAR configuration items for each partition that is invalid with NPAR disabled to keep the configuration file consistent.

Log file

The `-set` operation logs the following information for each device:

- The difference between configuration file and current configuration on the card
- Any syntax errors detected while parsing the script file
- Any error and warning while trying to set the value such as invalid value

The log file name is `<MAC[last four digits]>.log`. The log is formatted in conformance with the scripting file format. Error and warning messages start with a semicolon so you can use the log file as a configuration file. Use the `-stderr` command option to output the log file content to `STDERR` at the same time.

Script command example

The following examples show ways to use the `-list`, `-get`, `-set`, and `-getItemGuide` operations.

-list operation

```
C:\test\7.8.21>ccmcfg32 -list
 Card#          BUS       Device      Config           MAC Address
 ======      =========    =========   ======        ==================
     0        1:00:00      BCM57712      IFA          00:10:18:6F:D2:74
     1        1:00:01      BCM57712      IFA          00:10:18:6F:D2:76
     2        2:00:00      BCM57810      IFNA         00:10:18:C7:5F:60
     3        2:00:01      BCM57810      IFNA         00:10:18:C7:5F:62
     4        3:00:00      BCM5717         I          00:00:00:00:00:00
     5        3:00:01      BCM5717         I          00:00:00:00:00:00
     6        4:00:00      BCM5722         I          B8:AC:6F:93:86:BA
     7        5:00:00      BCM5720         I          00:10:18:57:20:00
     8        5:00:01      BCM5720         I          00:10:18:57:20:01
  *: Configure Block Letters: I:iSCSI; F:FCoE; N:Nic Partition; A:AFEX
```

-get operation

The following example dumps the configuration of each device into a file named `<MAC[last four digits]>.CFG`.

```
C:\test\7.8.21>ccmcfg32 -get
Dumping Configuration of Device [00:10:18:6F:D2:74] to 186FD274.CFG ...done.
Dumping Configuration of Device [00:10:18:6F:D2:76] to 186FD276.CFG ...done.
Dumping Configuration of Device [00:10:18:C7:5F:60] to 18C75F60.CFG ...done.
Dumping Configuration of Device [00:10:18:C7:5F:62] to 18C75F62.CFG ...done.
Dumping Configuration of Device [00:00:00:00:00:00] to 00000000.CFG ...done.
Dumping Configuration of Device [00:00:00:00:00:00] to 00000000.CFG ...done.
Dumping Configuration of Device [B8:AC:6F:93:86:BA] to 6F9386BA.CFG ...done.
Dumping Configuration of Device [00:10:18:57:20:00] to 18572000.CFG ...done.
Dumping Configuration of Device [00:10:18:57:20:01] to 18572001.CFG ...done.
```

The following example dumps the configuration of all devices in the platform into a single file named `outdata.txt`.

```
C:\test\7.8.21>ccmcfg32 -get outdata.txt
Dumping Configuration of Device [00:10:18:6F:D2:74] to outdata.txt ...done.
Dumping Configuration of Device [00:10:18:6F:D2:76] to outdata.txt ...done.
Dumping Configuration of Device [00:10:18:C7:5F:60] to outdata.txt ...done.
```

```
Dumping Configuration of Device [00:10:18:C7:5F:62] to outdata.txt ...done.
Dumping Configuration of Device [00:00:00:00:00:00] to outdata.txt ...done.
Dumping Configuration of Device [00:00:00:00:00:00] to outdata.txt ...done.
Dumping Configuration of Device [B8:AC:6F:93:86:BA] to outdata.txt ...done.
Dumping Configuration of Device [00:10:18:57:20:00] to outdata.txt ...done.
Dumping Configuration of Device [00:10:18:57:20:01] to outdata.txt ...done.
```

The following example dumps the configuration of all devices to stdout. In a DOS environment, terminal scrolling control uses the default -termlines=25 and -termwidth=80.

```
C:\test\7.8.21\ccmcfg32 -get -stdout
;*************************************************************************
;CCMCFG32 v7.8.21 - Comprehensive Configuration Management
;Copyright (C) 2000-2013 Broadcom Corporation
; Dumping Configuration Parameters of Device [00:00:00:00:00:00] to STDOUT
;*************************************************************************
[Device Parameters]
MAC Address = 00:00:00:00:00:00
PCI Function Number = 03:00:01
Device Type = BCM5717
Vendor ID = 0x14E4
Device ID = 0x1655
Subsystem Vendor ID = 0x14E4
Subsystem Device ID = 0x1655
[Section MBA Configuration Menu]
Option ROM = Enabled
Boot Protocol = iSCSI
Boot Strap Type = Auto
Hide Setup Prompt = Disabled
Setup Key Stroke = Ctrl-S
Banner Message Timeout = 4 Seconds
Link Speed = AutoNeg
Pre-boot Wake On LAN = Enabled
VLAN Mode = Disabled
VLAN ID = 1
...
```

The following example dumps the second card of information to stdout.

```
C:\test\7.8.21>ccmcfg32 -get -stdout -card 1
;*************************************************************************
;CCMCFG32 v7.8.21 - Comprehensive Configuration Management
;Copyright (C) 2000-2013 Broadcom Corporation
; Dumping Configuration Parameters of Device [00:10:18:6F:D2:76] to STDOUT
;*************************************************************************
[Device Parameters]
MAC Address = 00:10:18:6F:D2:76
PCI Function Number = 01:00:01
Device Type = BCM57712
Vendor ID = 0x14E4
Device ID = 0x1662
Subsystem Vendor ID = 0x14E4
Subsystem Device ID = 0x1213
[Section Device Hardware Configuration]
Multi-Function Mode = NPAR
DCB Protocol = Disabled
SR-IOV = Disabled
Max Number of PF MSIX Vectors = 0
[Section MBA Configuration Menu]
Option ROM = Enabled
Boot Protocol = Preboot Execution Environment (PXE)
```

```
Boot Strap Type = Auto
Hide Setup Prompt = Disabled
Setup Key Stroke = Ctrl-S
Banner Message Timeout = 5 Seconds
Link Speed = 10Gbps
Pre-boot Wake On LAN = Disabled
VLAN Mode = Disabled
VLAN ID = 1
Boot Retry Count = 0
…
```

-set operation

The following example checks the difference of `outdata.txt` with current devices on the platform.

```
C:\test\7.8.21>ccmcfg32 -set outdata.txt -setMode check
Set 00:10:18:6F:D2:74 by outdata.txt...Nothing to Save; 0 Err, 0 Wrn, 0 Dif
Set 00:10:18:6F:D2:76 by outdata.txt...Nothing to Save; 0 Err, 0 Wrn, 0 Dif
Set 00:10:18:C7:5F:60 by outdata.txt...Nothing to Save; 0 Err, 0 Wrn, 0 Dif
Set 00:10:18:C7:5F:62 by outdata.txt...Nothing to Save; 0 Err, 0 Wrn, 0 Dif
Set 00:00:00:00:00:00 by outdata.txt...NOT Saved; 0 Err, 0 Wrn, 6 Dif
Set B8:AC:6F:93:86:BA by outdata.txt...NOT Saved; 0 Err, 0 Wrn, 0 Dif
Set 00:10:18:57:20:00 by outdata.txt...NOT Saved; 0 Err, 0 Wrn, 0 Dif
Set 00:10:18:57:20:01 by outdata.txt...NOT Saved; 0 Err, 0 Wrn, 0 Dif
CONGRATULATIONS: Script File Check Passed
```

The following example checks the difference between `cfg.cfg` and current devices and outputs the log files to `STDERR`. The first three devices contain no configuration difference from the file, while the fourth device contains one difference. This is because the `cfg.cfg` is dumped from the `-get` operation with a hidden CHAP secret string of `************` that does not match the actual string in the device.

```
E:\ccm2>ccmcfg32 -set cfg.cfg -setMode check -stderr
Press any key to continue... or Attach Debugger Now:
Set 00:24:81:00:60:20 by cfg.cfg..
;***********************************************************************
; NO Difference Detected
;***********************************************************************
NOT Saved; 0 Err, 0 Wrn, 0 Dif
Set 00:24:81:00:60:21 by cfg.cfg..
;***********************************************************************
; NO Difference Detected
;***********************************************************************
NOT Saved; 0 Err, 0 Wrn, 0 Dif
Set 00:10:18:3E:01:24 by cfg.cfg..
;***********************************************************************
; NO Difference Detected
;***********************************************************************
NOT Saved; 0 Err, 0 Wrn, 0 Dif
Set 00:10:18:3E:01:26 by cfg.cfg..
;***********************************************************************
;CCMCFG32 v2.0.9 - Comprehensive Configuration Utility
;Copyright (C) 2000-2010 Broadcom Corporation
; Configuration Difference between File cfg.cfg and <00:10:18:3E:01:26>
;***********************************************************************
[Device Parameters]
MAC Address = 00:10:18:3E:01:26
PCI Function Number = 0A:00:01
Device Type = BCM57712Vendor ID = 0x14E4
Device ID = 0x1662
Subsystem Vendor ID = 0x14E4
```

```
        Subsystem Device ID = 0x1200
        [Section iSCSI Boot Main Menu]
        [Initiator Parameters]
        CHAP Secret = ************ ;[L277] Old Value = *****...*****
        ;**********************************************************************
        ; Total 1 DIFFERENCES Detected
        ;**********************************************************************
        NOT Saved; 0 Err, 0 Wrn, 1 Dif
        CONGRATULATIONS: Script File Check Passed
```

-getItemGuide operation

```
        E:\ccm2>ccmcfg32.exe -card 2 -getItemGuide -stdout

        ;**********************************************************************
        ;CCMCFG32 v6.0.2 - Comprehensive Configuration Utility
        ;Copyright (C) 2000-2010 Broadcom Corporation
        ; Dumping Configuration Item Guide of Device [00:10:18:3E:01:24] to STDOUT
        ;**********************************************************************

        [Device Parameters]
        MAC Address = 00:10:18:3E:01:24
        PCI Function Number = 07:00:00
        Device Type = BCM57712
        Vendor ID = 0x14E4
        Device ID = 0x1662
        Subsystem Vendor ID = 0x14E4
        Subsystem Device ID = 0x1200

        [Section Device Hardware Configuration]

        ;Configure PHY Selection Policy:
        PHY Selection Policy = < Hardware Default | First PHY | Second PHY | First
        PHY
        P
        riority | Second PHY Priority > ; Current = Second PHY

        [Section MBA Configuration Menu]

        ;Enable/Disable Option ROM:
        Option ROM             = < Enabled | Disabled > ; Current = Enabled

        ;Select Boot Protocol:
        Boot Protocol          = < Preboot Execution Environment (PXE) | Remote
        Program
        Load (RPL) | Bootstrap Protocol (BOOTP) | iSCSI | FCoE | None > ; Current
        =
        iSCS
        I

        ;Select Boot Strap Type:
        Boot Strap Type        = < Auto | BBS | Int18h | Int19h > ; Current = Auto

        ;Configure Whether Setup Prompt is Displayed during ROM Initialization:
        Hide Setup Prompt      = < Enabled | Disabled > ; Current = Disabled

        ;Configure Key Strokes to Invoke This Configuration Menu:
        Setup Key Stroke       = < Ctrl-S | Ctrl-B > ; Current = Ctrl-S
```

```
;Configure Banner Time Out Value:
Banner Message Timeout = <Integer (0 to 14)> ; current = 3


;Configure Link Speed:
Link Speed              = AutoNeg ; Read Only


;Configure Pre-Boot Wake On LAN:
Pre-boot Wake On LAN   = < Enabled | Disabled > ; Current = Disabled


;Configure VLAN:
VLAN Mode              = < Enabled | Disabled > ; Current = Disabled


;Configure VLAN ID:
VLAN ID                = <Integer (0 to 1023)> ; current = 0


;Select Number of Boot Retries:
Boot Retry Count       = <Integer (0 to 7)> ; current = 0


[Section iSCSI Boot Main Menu]

[General Parameters]

;Acquire TCP/IP Configuration via Stateful or Stateless Autoconfiguration:
IP Autoconfiguration     = < Enabled | Disabled > ; Current = Enabled


;Acquire iSCSI Parameters via DHCP:
iSCSI Parameters via DHCP = < Enabled | Disabled > ; Current = Enabled


;Enable/Disable CHAP Authentication:
CHAP Authentication      = < Enabled | Disabled > ; Current = Disabled


;Enable/Disable Booting to iSCSI Target After Logon:
Boot to iSCSI Target     = < Disabled | Enabled | One Time Disabled > ;
Current
= Enabled


;Configure DHCP Vendor ID:
DHCP Vendor ID           = < String (0 to 32 Chars) > ; current = BRCM ISAN


;Configure Link Up Delay Time in Seconds:
Link Up Delay Time       = <Integer (0 to 255)> ; current = 0


;Enable/Disable TCP Timestamp:
Use TCP Timestamp        = < Enabled | Disabled > ; Current = Disabled


;Enable/Disable Target Appears as First Hard Drive in the System:
Target as First HDD      = < Enabled | Disabled > ; Current = Disabled


;Configure Number of Retries in 2s Interval When LUN is Busy:
LUN Busy Retry Count     = <Integer (0 to 60)> ; current = 0


;IP Version Support:
IP Version               = < IPv4 | IPv6 > ; Current = IPv6


;Enable HBA Boot Mode:
HBA Boot Mode            = < Enabled | Disabled > ; Current = Disabled


[Initiator Parameters]
```

```
;Configure Initiator IP address:
IP Address        = < xxx::xxx:xxx.xxx.xxx.xxx IPv6 address> ; Current =
::

;Configure IP Subnet Mask Prefix Length:
Subnet Mask Prefix = <Integer (0 to 128)> ; current = 64

;Configure Default Gateway IP Address:
Default Gateway    = < xxx::xxx:xxx.xxx.xxx.xxx IPv6 address> ; Current =
::

;Configure Primary DNS IP Address:
Primary DNS        = < xxx::xxx:xxx.xxx.xxx.xxx IPv6 address> ; Current =
::

;Configure Secondary DNS IP Address:
Secondary DNS      = < xxx::xxx:xxx.xxx.xxx.xxx IPv6 address> ; Current =
::

;Configure iSCSI Name:
iSCSI Name         = < String (0 to 128 Chars) > ; current = iqn.1995-
05.com.bro
adcom.iscsiboot

;Configure CHAP ID:
CHAP ID            = < String (0 to 128 Chars) > ; current =

;Configure CHAP Secret:
CHAP Secret        = < String (12 to 16 Chars) > ; current =

[1st Target Parameters]

;Enable/Disable Target Establishment:
Connect      = < Enabled | Disabled > ; Current = Disabled

;Configure Target IP Address:
IP Address  = < xxx::xxx:xxx.xxx.xxx.xxx IPv6 address> ; Current = ::

;Configure Target TCP Port Number:
TCP Port    = <Integer (1 to 65535)> ; current = 3260

;Configure Target Boot LUN Number:
Boot LUN    = <Integer (0 to 255)> ; current = 0

;Configure iSCSI Name:
iSCSI Name  = < String (0 to 128 Chars) > ; current =

;Configure CHAP ID:
CHAP ID     = < String (0 to 128 Chars) > ; current =

;Configure CHAP Secret:
CHAP Secret = < String (12 to 16 Chars) > ; current =

[2nd Target Parameters]

;Enable/Disable Target Establishment:
Connect      = < Enabled | Disabled > ; Current = Disabled

;Configure Target IP Address:
```

```
      IP Address  = < xxx::xxx:xxx.xxx.xxx.xxx IPv6 address> ; Current = ::


;Configure Target TCP Port Number:
TCP Port     = <Integer (1 to 65535)> ; current = 3260


;Configure Target Boot LUN Number:
Boot LUN    = <Integer (0 to 255)> ; current = 0


;Configure iSCSI Name:
iSCSI Name  = < String (0 to 128 Chars) > ; current =


;Configure CHAP ID:
CHAP ID     = < String (0 to 128 Chars) > ; current =


;Configure CHAP Secret:
CHAP Secret = < String (12 to 16 Chars) > ; current =


[Secondary Device Parameters]


;Select Secondary Device:
Secondary Device            = < xx:xx:xx:xx:xx:xx > ; Current =
00:00:00:00:00
:00


;Use Independent Target Portal when Multipath I/O Mode is Enabled:
Use Independent Target Portal = < Enabled | Disabled > ; Current = Disabled


;Use Independent Target Name when Multipath I/O Mode is Enabled:
Use Independent Target Name   = < Enabled | Disabled > ; Current = Disabled


[Section FCoE Boot Main Menu]


[General Parameters]


;Enable/Disable Booting to FCoE Target after Logon:
Boot to FCoE Target     = < Disabled | Enabled | One Time Disabled > ; Current
=
Enabled


;Enable/Disable Target Appears as First Hard Drive in The System:
Target as First HDD     = < Enabled | Disabled > ; Current = Disabled


;Configure Link Up Delay Time in Seconds:
Link Up Delay Time      = <Integer (0 to 255)> ; current = 0


;Configure Number of Retries in 2s Interval When LUN is Busy:
LUN Busy Retry Count   = <Integer (0 to 60)> ; current = 0


;Configure Fabric Discovery Retry Value:
Fabric Discovery Retry = <Integer (0 to 8)> ; current = 4


;Enable HBA Boot Mode:
HBA Boot Mode = Enabled ; Read Only


[No.1 Target Parameters]


;Enable/Disable Target Establishment:
Connect  = < Enabled | Disabled > ; Current = Disabled
```

```
;Configure WWPN:
WWPN     = < String (0 to 16 Chars) > ; current = 0000000000000000

;Configure target Boot LUN number:
Boot LUN = <Integer (0 to 255)> ; current = 0
[No.2 Target Parameters]

;Enable/Disable Target Establishment:
Connect  = < Enabled | Disabled > ; Current = Disabled

;Configure WWPN:
WWPN     = < String (0 to 16 Chars) > ; current = 0000000000000000

;Configure target Boot LUN number:
Boot LUN = <Integer (0 to 255)> ; current = 0

[No.3 Target Parameters]

;Enable/Disable Target Establishment:
Connect    = < Enabled | Disabled > ; Current = Disabled

;Configure WWPN:
WWPN     = < String (0 to 16 Chars) > ; current = 0000000000000000

;Configure target Boot LUN number:
Boot LUN = <Integer (0 to 255)> ; current = 0

[No.4 Target Parameters]

;Enable/Disable Target Establishment:
Connect  = < Enabled | Disabled > ; Current = Disabled

;Configure WWPN:
WWPN     = < String (0 to 16 Chars) > ; current = 0000000000000000

;Configure target Boot LUN number:
Boot LUN = <Integer (0 to 255)> ; current = 0

[No.5 Target Parameters]

;Enable/Disable Target Establishment:
Connect  = < Enabled | Disabled > ; Current = Disabled

;Configure WWPN:
WWPN     = < String (0 to 16 Chars) > ; current = 0000000000000000

;Configure target Boot LUN number:
Boot LUN = <Integer (0 to 255)> ; current = 0

[No.6 Target Parameters]

;Enable/Disable Target Establishment:
Connect  = < Enabled | Disabled > ; Current = Disabled

;Configure WWPN:
WWPN     = < String (0 to 16 Chars) > ; current = 0000000000000000

;Configure target Boot LUN number:
Boot LUN = <Integer (0 to 255)> ; current = 0
```

```
[No.7 Target Parameters]

;Enable/Disable Target Establishment:
Connect  = < Enabled | Disabled > ; Current = Disabled

;Configure WWPN:
WWPN     = < String (0 to 16 Chars) > ; current = 0000000000000000

;Configure target Boot LUN number:
Boot LUN = <Integer (0 to 255)> ; current = 0

[No.8 Target Parameters]

;Enable/Disable Target Establishment:
Connect  = < Enabled | Disabled > ; Current = Disabled

;Configure WWPN:
WWPN     = < String (0 to 16 Chars) > ; current = 0000000000000000

;Configure target Boot LUN number:
Boot LUN = <Integer (0 to 255)> ; current = 0

[Section NIC Partition Configuration]

;Enable or Disable NIC Partition Function:
NIC Partition = < Enabled | Disabled > ; Current = Disabled
```

Support and other resources

Before you contact HP

Be sure to have the following information available before you call HP:

- Active Health System log (HP ProLiant Gen8 or later products)

  Download and have available an Active Health System log for 3 days before the failure was detected. For more information, see the *HP iLO 4 User Guide* or *HP Intelligent Provisioning User Guide* on the HP website (http://www.hp.com/go/ilo/docs).

- Onboard Administrator SHOW ALL report (for HP BladeSystem products only)

  For more information on obtaining the Onboard Administrator SHOW ALL report, see the HP website (http://www.hp.com/go/OAlog).

- Technical support registration number (if applicable)

- Product serial number

- Product model name and number

- Product identification number

- Applicable error messages

- Add-on boards or hardware

- Third-party hardware or software

- Operating system type and revision level

HP contact information

For United States and worldwide contact information, see the Contact HP website (http://www.hp.com/go/assistance).

In the United States:

- To contact HP by phone, call 1-800-334-5144. For continuous quality improvement, calls may be recorded or monitored.

- If you have purchased a Care Pack (service upgrade), see the Support & Drivers website (http://www8.hp.com/us/en/support-drivers.html). If the problem cannot be resolved at the website, call 1-800-633-3600. For more information about Care Packs, see the HP website (http://pro-aq-sama.houston.hp.com/services/cache/10950-0-0-225-121.html).

Acronyms and abbreviations

CCM
Comprehensive Configuration Management

CHAP
Challenge Handshake Authentication Protocol

DHCP
Dynamic Host Configuration Protocol

DNS
domain name system

FCoE
Fibre Channel over Ethernet

HBA
host bus adapter

HDD
hard drive

IPv4
Internet Protocol version 4

IPv6
Internet Protocol version 6

IQN
iSCSI qualified name

iSCSI
Internet Small Computer System Interface

LUN
logical unit number

MAC

Media Access Control

MBR

multi-boot agent

MSI-X

Message Signaled Interrupt Extended

NPAR

NIC partitioning multi-function mode

NVRAM

nonvolatile memory

PCI

payment card industry

PF

physical function

PHY

physical layer device

PXE

preboot execution environment

VF

SR-IOV virtual function

VIF

virtual interface configuration

VLAN

virtual local-area network

WWNN

World Wide Node Name

WWPN

worldwide port name

Documentation feedback

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